SUBSTITUTE SPECIFICATION (marked up version)

Description of the Illustrated Embodiments

~~Fig. 1 is a cross section of one preferred embodiment of the adjustable air cushion bicycle seat 10, which employs an hydraulic ram system mounted within the seat post 12 of a bicycle frame 14 and controlled by the lever arm 13 14a of a valve mounted under the seat mounting bracket 15 shown in Fig. 2a as fill port valve 34. A first valve tube 16 from the valve 34 with sidewalls 18 is mounted within the seat post 12 with an open end 20 secured to the top opening of the seat post 12 and a closed end 22 vertically aligned within the seat post 12 to form an impervious internal reservoir 24.~~

~~A tubular ram 26 with sidewalls 28 is comprised of the seat post 12 and a surrounding sliding tubular extender 28 with sidewalls 28a slideably attached about the seat post 12 that may be moved and locked to provide a desired length extension about the seat post 12 to extend the ram 26. The seat post 12 has an open end 30 slideably mounted within the top of the first tubular extender 16 28 and a capped end 38 to form an internal reservoir 24 defined by the bottom of the first tubular extender tube 22 28 and the sidewalls 18, 28a of the first valve tube 16 and ram 16 26. The internal reservoir 24 is in communication with a fill port valve 34.~~

Fig. 1 is a cross section of one preferred embodiment of the adjustable air cushion bicycle seat, which employs an hydraulic ram system 10 mounted within the seat post 12 receptacle segment of a bicycle frame 14. The ram system is comprised of an open ended tubular seat post 12 having an open end 30 surrounded by a sliding tubular extension 28 with a closed end 22 forming an internal reservoir 24. The seat post 12 and sliding tubular extension 28 are mounted within the open end 20 of the bicycle frame 14. The seat post 12 and extension 28 are thus secured within the open end 20 of the bicycle frame 14 to provide an hydraulic ram system, which extends the seat (not shown) to a desired height while providing a cushion of air/oil within the internal reservoir 24 to absorb road shocks. A sliding extension about the ram 26, not shown, may be associated with the ram 26 and seat such that the extension may be locked to extend the height of the seat.

The internal reservoir 24 is in communication with the valve tube 16 of a fill port valve 34, which determines the amount of oil and air under pressure entering the internal reservoir 24. The lever arm 13 of the fill port valve 34 is mounted under the seat mounting bracket 15 shown in Fig. 2a to enable manual control of the oil and air entering the internal reservoir 24.

The fill port valve 34 is mounted within the ram 26 with a closed end 38 secured to the seat mounting bracket 15. Its open end 40 is mounted within the ram 26 such that its open end 40 is in communication with the internal reservoir 24. When in place, the closed end 38 caps the internal reservoir 24 trapping therein fluids and air within the internal reservoir 24 via a liquid trap seal formed by pairs of O-rings 39 shown in Figs 2a, 2b, and 2c. Fig. 2a shows the fill port valve 34 open to lower the seat. Fig. 2b shows the fill port valve 34 open to raise the seat. Fig. 2c shows the fill port valve 34 closed in a locked position to maintain the seat position, which retains a column of cushion air within the ram 26.

The oil flow path with the fill port valve 34 open and closed is shown in Figs. 2d and 2e. The channels 41 of the fill port valve 34 are sized to provide oil flow restriction to prevent a sudden raising or lowering of the ram 26 in the event of pressure loss.

A pressurized reservoir 42 is mounted beneath the bicycle seat in communication with the ~~first~~ valve tube 16 and filled with oil and air under pressure via a fill port 43. The reservoir 42 is structured as a dual air/liquid phase settling reservoir to collect and remove foam from the internal reservoir by providing sufficient liquid surface area for the foam to coalesce into the liquid phase. An air hose nipple (not shown) is attached to the interior of the fill port 43 and in communication with the interior of the pressurized reservoir 24 so that increased air under pressure may be injected for a firmer ride. Alternatively, air may be released from the pressurized reservoir 42 via the fill port 43 for a softer ride. A fill tube 46 having a fill duct 34a is in communication with the pressurized reservoir 42 ~~and the fill duct 34a~~ to selectively fill the internal reservoir 24 with oil and air under pressure to form an air cushion within the ram 26.

A set valve ~~(not shown)~~ 48 may be included to seal off the pressurized reservoir 42 from the internal reservoir 24 so that the ride may be regulated by just the height of the air cushion within the internal reservoir 24.

Fig. 3 is a top view of the pressurized reservoir 42 and set valve 48.

Fig. 4a is a top view of a short knee 50 attached to the base of the ~~bicycle~~ seat mounting bracket 135. Fig. 4b is a side view of the short knee 50 shown in Fig. 4a. Fig. 5a is a side view of a corresponding long knee 52 attached to the seat post 12 of the bicycle frame 14. Fig. 5b is a top view of the long knee shown in Fig. 5a. The short knee 50 is connected to the long knee 52 with a hinge pin 53 so that the ~~bicycle~~ seat mounting bracket 135 may extend up and down, but not twist.

Fig. 6 is a schematic overview of the adjustable air cushion bicycle seat showing how the pressurized reservoir 42 is selectively activated by the valve 34 to raise and lower the column of air within the internal reservoir 24 to adjust the ride. Thus, to adjust the seat height and ride, the valve is opened to select either pressurized air or oil to enter the ram 26 and internal reservoir 24. The seat is then raised or lowered, which draws in or forces out the desired air or oil combination to adjust the height of the air column within the internal reservoir 24. The set valve ~~34~~ 48 may then be closed so that the ride is dependent solely upon the height of the air column within the internal reservoir 24. Alternatively, it may be left open to make the ride dependent upon the pressure within the pressurized reservoir 42 as well.

The invention 10 thus provides an adjustable bicycle seat with cushioned ride dependent upon an adjustable volume and pressure or air and liquid within the internal reservoir 24, which selectively determines the height of the air column within a ram system supporting the bicycle seat to absorb ride shock.

Although this specification has referred to the illustrated embodiments, it is not intended to restrict the scope of the appended claims. The claims themselves recite those features deemed essential to the invention.